FIG. 1

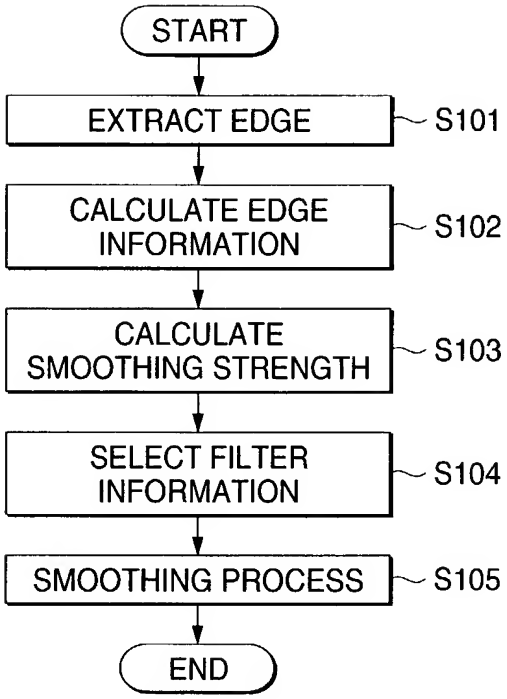

START
EXTRACT EDGE
S101
CALCULATE EDGE INFORMATION
S102
CALCULATE SMOOTHING STRENGTH
S103
SELECT FILTER INFORMATION
S104
SMOOTHING PROCESS
S105
END

FIG. 2

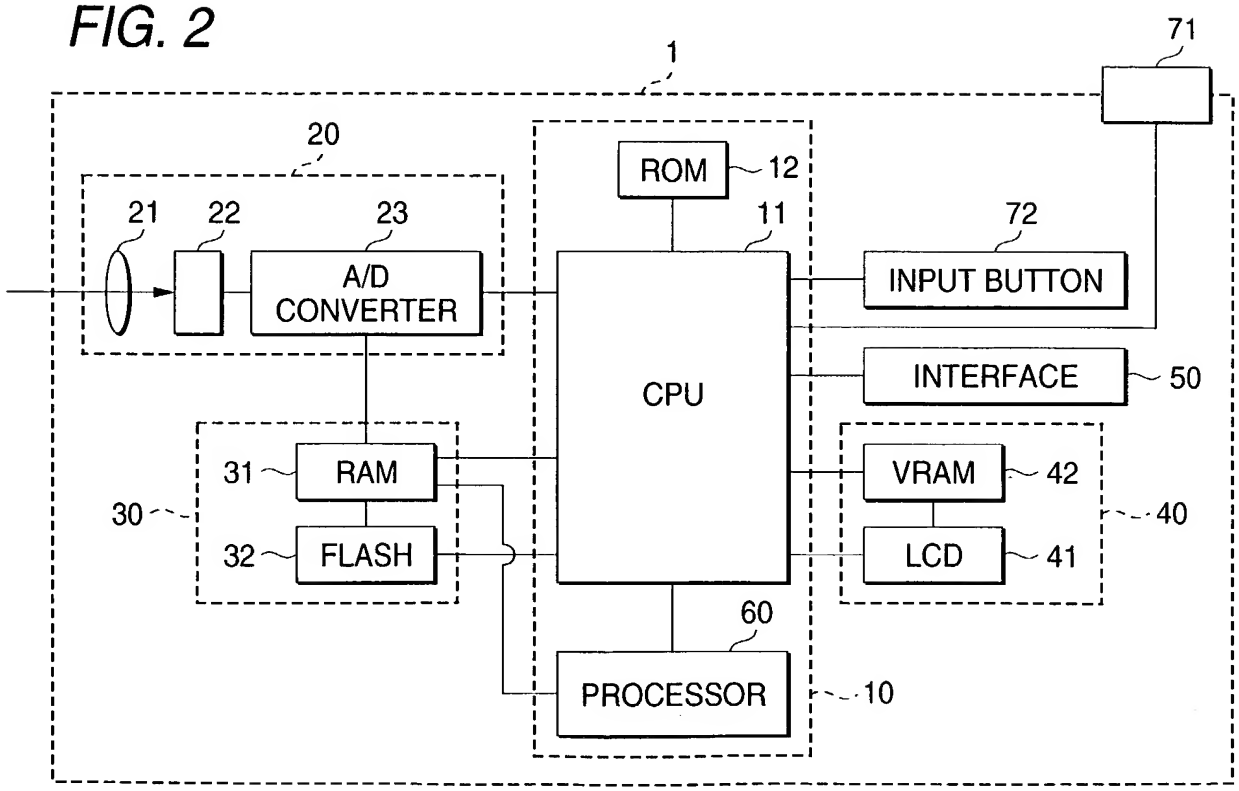

1
71
20
21
22
23
A/D CONVERTER
ROM
12
11
72
INPUT BUTTON
CPU
INTERFACE
50
31
RAM
30
32
FLASH
VRAM
42
40
LCD
41
60
PROCESSOR
10

FIG. 3

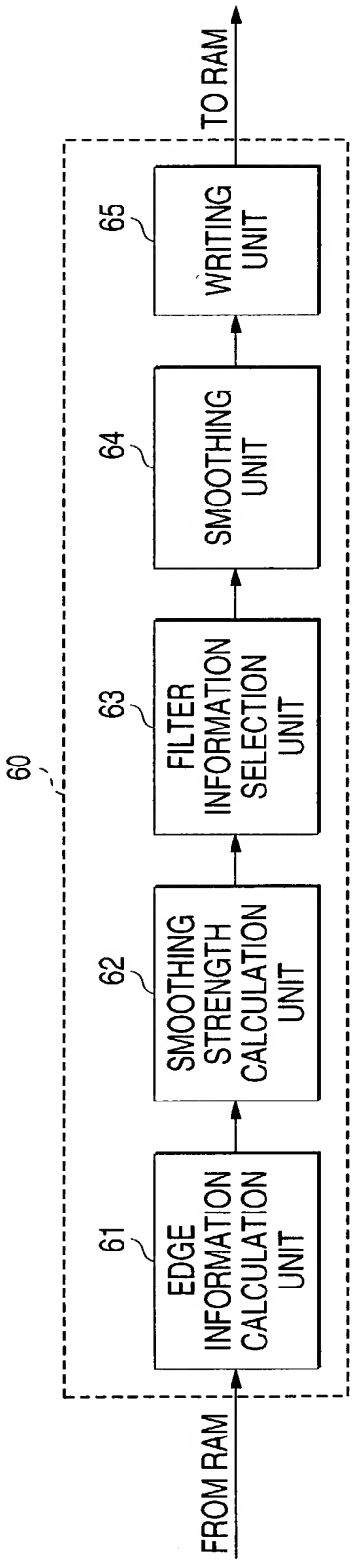

FROM RAM
60
61
EDGE INFORMATION CALCULATION UNIT
62
SMOOTHING STRENGTH CALCULATION UNIT
63
FILTER INFORMATION SELECTION UNIT
64
SMOOTHING UNIT
65
WRITING UNIT
TO RAM

FIG. 4

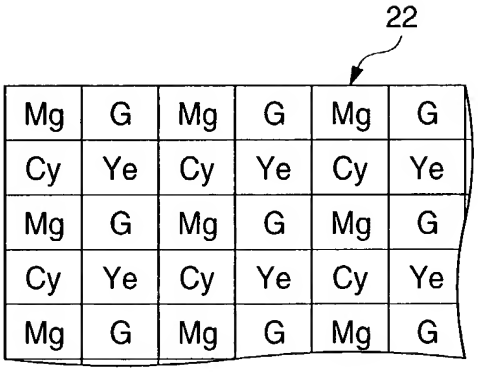

22
Mg G Mg G Mg G
Cy Ye Cy Ye Cy Ye
Mg G Mg G Mg G
Cy Ye Cy Ye Cy Ye
Mg G Mg G Mg G

FIG. 5

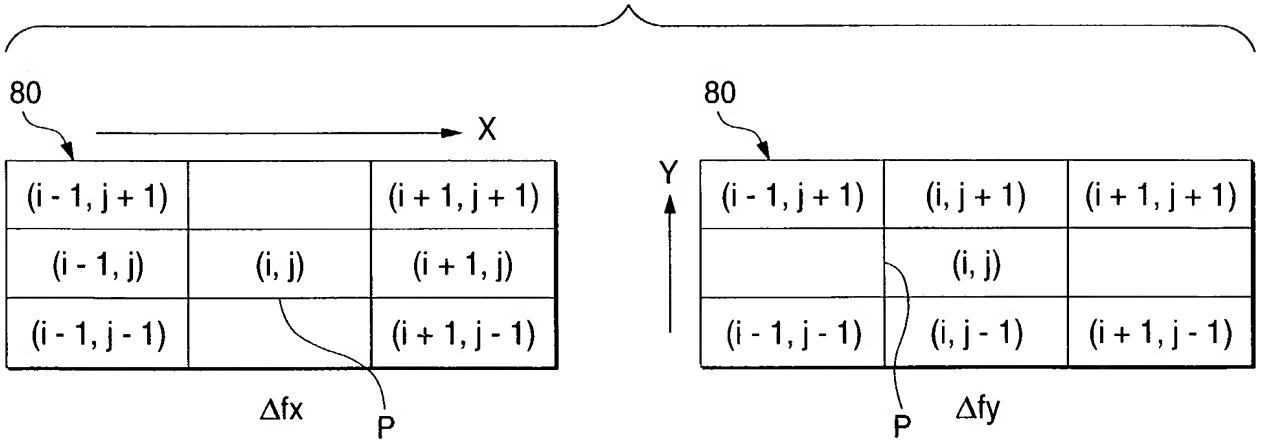

80
X
(i - 1, j + 1)
(i + 1, j + 1)
(i - 1, j)
(i, j)
(i + 1, j)
(i - 1, j - 1)
(i + 1, j - 1)
Δfx
P
80
Y
(i - 1, j + 1)
(i, j + 1)
(i + 1, j + 1)
(i, j)
(i - 1, j - 1)
(i, j - 1)
(i + 1, j - 1)
P
Δfy

FIG. 6

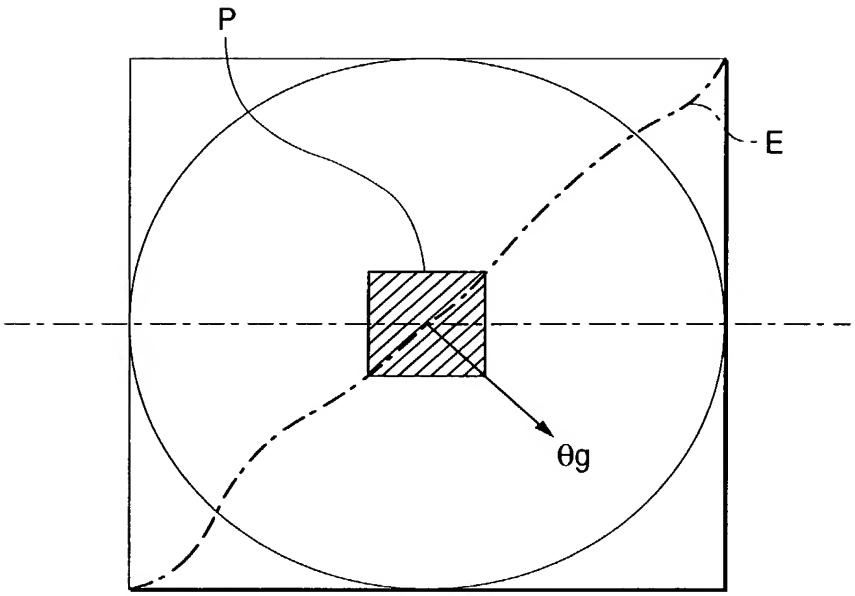


FIG. 7

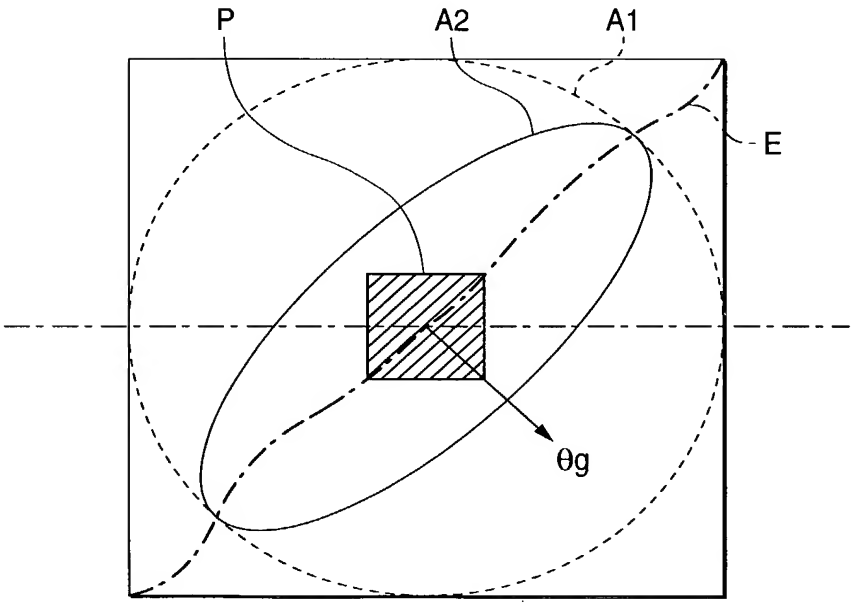


FIG. 8

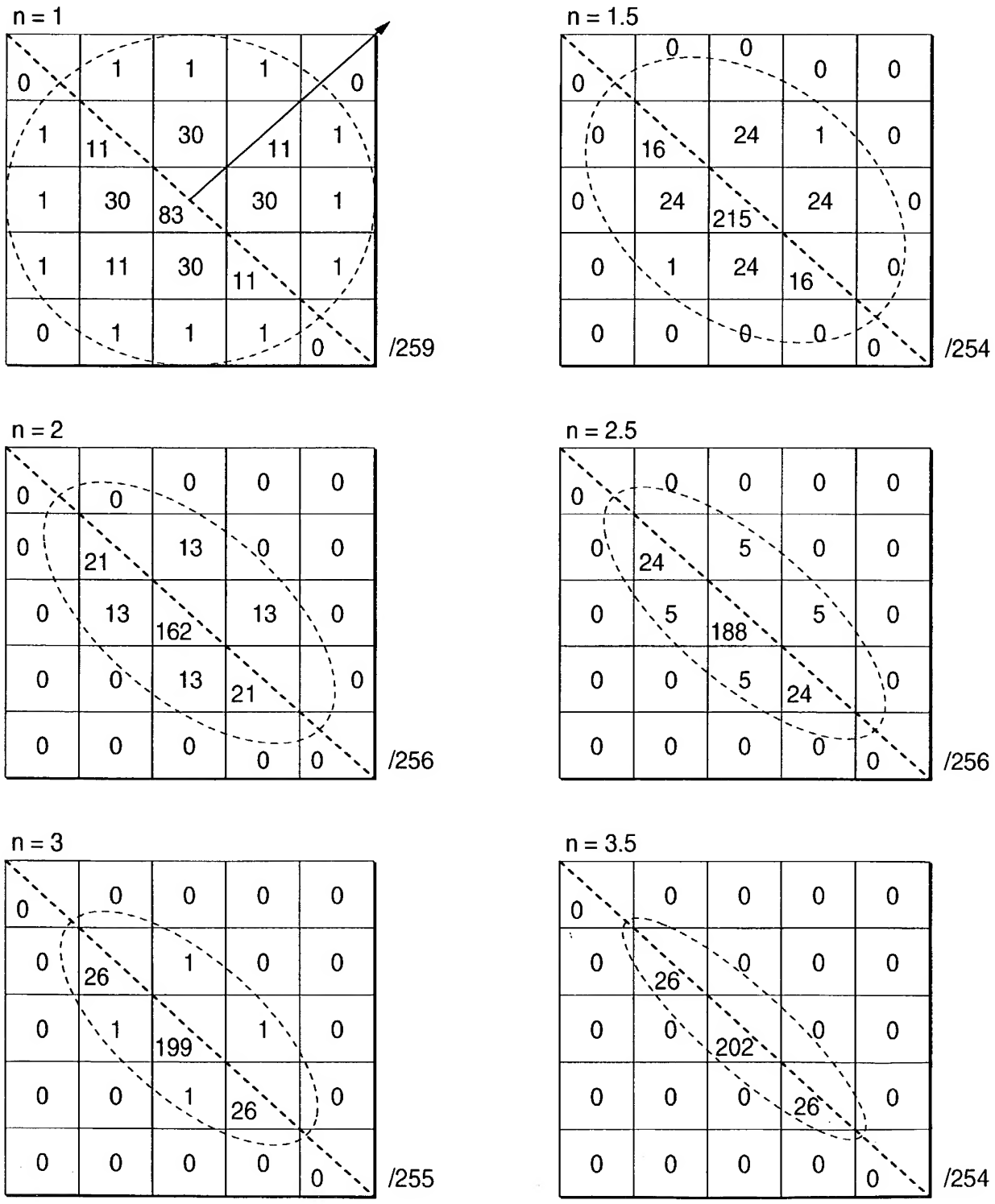
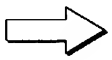

n = 1
0 1 1 1 0
1 11 30 11 1
1 30 83 30 1
1 11 30 11 1
0 1 1 1 0
/259
n = 1.5
0 0 0 0 0
0 16 24 1 0
0 24 215 24 0
0 1 24 16 0
0 0 0 0 0
/254
n = 2
0 0 0 0 0
0 21 13 0 0
0 13 162 13 0
0 0 13 21 0
0 0 0 0 0
/256
n = 2.5
0 0 0 0 0
0 24 5 0 0
0 5 188 5 0
0 0 5 24 0
0 0 0 0 0
/256
n = 3
0 0 0 0 0
0 26 1 0 0
0 1 199 1 0
0 0 1 26 0
0 0 0 0 0
/255
n = 3.5
0 0 0 0 0
0 26 0 0 0
0 0 202 0 0
0 0 0 26 0
0 0 0 0 0
/254

FIG. 9

$\sigma = 0.5, n = 1, m = 1, \theta g = 45°$

0	0	0	0	0
0	3	21	3	0
0	21	158	21	0
0	3	21	3	0
0	0	0	0	0

/254



$\sigma = 0.5, n = 3, m = 1, \theta g = 45°$

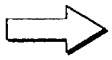
0	0	0	0	0
0	5	0	0	0
0	0	247	0	0
0	0	0	5	0
0	0	0	0	0

/257

$\sigma = 0.7, n = 1, m = 1, \theta g = 45°$

0	1	1	1	0
1	11	30	11	1
1	30	83	30	1
1	11	30	11	1
0	1	1	1	0

/259



$\sigma = 0.7, n = 3, m = 1, \theta g = 45°$

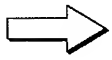
0	0	0	0	0
0	26	1	0	0
0	1	199	1	0
0	0	1	26	0
0	0	0	0	0

/255

$\sigma = 0.8, n = 1, m = 1, \theta g = 45°$

0	1	3	1	0
1	13	29	13	1
3	29	64	29	3
1	13	29	13	1
0	1	3	1	0

/252



$\sigma = 0.8, n = 3.5, m = 1, \theta g = 45°$

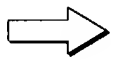
0	0	0	0	0
0	37	1	0	0
0	1	177	1	0
0	0	1	37	0
0	0	0	0	0

/255

$\sigma = 0.9, n = 1, m = 1, \theta g = 45°$

0	2	4	2	0
2	15	27	15	2
4	27	51	27	4
2	15	27	15	2
0	2	4	2	0

/251



$\sigma = 0.9, n = 4, m = 1.25, \theta g = 45°$

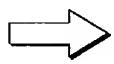
0	0	0	0	0
0	28	1	0	0
0	1	195	1	0
0	0	1	28	0
0	0	0	0	0

/255

$\sigma = 1.0, n = 1, m = 1, \theta g = 45°$

1	3	6	3	1
3	15	25	15	3
6	25	41	25	6
3	15	25	15	3
1	3	6	3	1

/253



$\sigma = 1.0, n = 4.5, m = 1.5, \theta g = 45°$

0	0	0	0	0
0	22	1	0	0
0	1	209	1	0
0	0	1	22	0
0	0	0	0	0

/257

FIG. 10

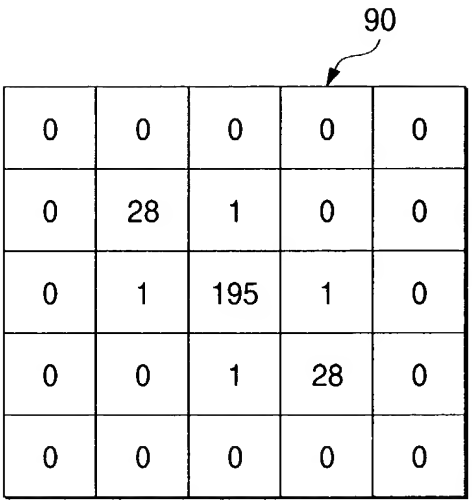


FIG. 11

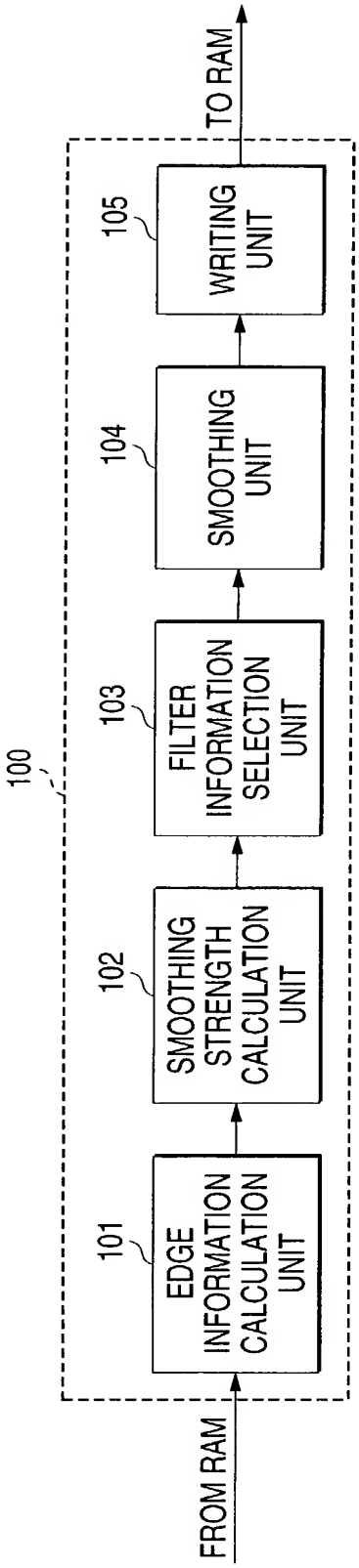
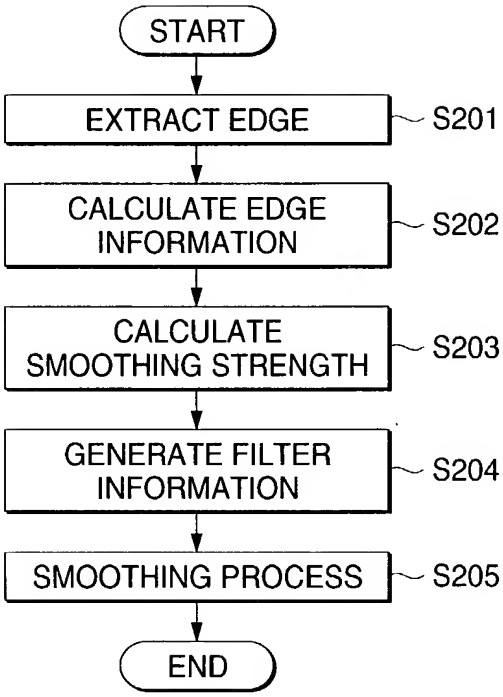

FROM RAM
100
101
EDGE INFORMATION CALCULATION UNIT
102
SMOOTHING STRENGTH CALCULATION UNIT
103
FILTER INFORMATION SELECTION UNIT
104
SMOOTHING UNIT
105
WRITING UNIT
TO RAM

FIG. 12


START
EXTRACT EDGE
S201
CALCULATE EDGE INFORMATION
S202
CALCULATE SMOOTHING STRENGTH
S203
GENERATE FILTER INFORMATION
S204
SMOOTHING PROCESS
S205
END